BATTERY CASE HAVING A FLANGE IN THE TERMINAL HOLE

BACKGROUND OF THE INVENTION

1. Field of the Invention:

The present invention relates to a battery case and, more particularly, to such a battery case, which has an inside flange protruded from the inside wall around the terminal hole to support the contact portion of the contact member in positive contact with the positive terminal of the battery and to prohibit direct contact between the electric wire connecting portion of the contact member and the battery.

2. Description of the Related Art:

The development of battery has a long history. Storing electricity in cylindrical energy storage means for necessary use brings a great convenience to human life. The application of dry batteries breaks through the limitations of use of electric appliances.

Various container means (battery cases) have been disclosed for holding a battery. FIG. 1 shows a battery case **10** according to the prior art. The battery case **10** has a terminal hole **102** in the peripheral wall **101** corresponding to the positive terminal of the battery, and a metal contact member **20** mounted in the terminal hole **102**. The metal contact member **20** has a tubular body portion **201** mounted in the terminal hole **102**, a contact portion **202** closely attached to the inner surface of the peripheral wall **101** for the contact of the positive terminal of the battery, and a protruding connecting portion **203** extended from the contact portion **202** and electrically connected to the corresponding electric wire **204** by clamping or soldering. This design of battery case **10** is still not satisfactory in function because the connecting portion **203** may touch the shell (negative pole) of the battery during installation of the battery in the battery case **10**.

FIG. 2 shows another design of battery case **30**. According to this design, the battery case **30** comprises a terminal hole **302** in the peripheral wall **301**

corresponding to the positive terminal of the battery, a recess **303** at the outer surface of the peripheral wall **301** around the terminal hole **302**, a conducting plate **40** mounted in the recess **303**, a washer **50** mounted in the recess **303** and supported on the conducting plate **40**, and a contact member **60** riveted to the terminal hole **302** to secure the conducting plate **40** and the washer **50** to the battery case **30**. The contact member **60** has a round contact head **601** disposed inside the battery case **30** for the contact of the positive terminal of the battery. The conducting member **40** has a protruding connecting portion **401** connected to the corresponding electric wire **402**. The connection area between the connecting portion **401** and the electric wire **402** is sealed with an electrically insulative jacket **403**. This design of battery case still has drawbacks. Because the contact member **60** is a solid member, it is not easy to hold the contact member **60** in position with an implement during installation. Therefore, the installation of the contact member **60** cannot be achieved by a fully automatic machine. Further, because the connecting portion **401** is extended to the outside of the battery case **30**, it tends to be broken accidentally. The use of the electrically insulative jacket **403** also greatly complicates the fabrication of the battery case **30**.

Therefore, it is desirable to provide a battery case that eliminates the aforesaid drawbacks.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a battery case, which prevents accidental contact of the positive contact member with the shell of the battery. To achieve this and other objects of the present invention, the battery case comprises a terminal hole in a peripheral wall thereof, and a contact member mounted in the terminal hole for the contact of the positive terminal of a battery, the contact member having a cylindrical mounting portion riveted to the terminal hole and a contact portion disposed inside the battery case for the contact of the positive terminal of a battery, and a connecting portion extended from the contact portion

and connected to an electric wire, wherein the peripheral wall of the battery case has a flange protruded from an inner surface thereof around the terminal hole and adapted to support the contact portion of the contact member and to keep the connecting portion of the contact member away from the battery to be positioned in the battery case.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic drawing showing the arrangement of a positive contact member in a battery case according to the prior art.

FIG. 2 is a schematic drawing showing the arrangement of another design of positive contact member in a battery case according to the prior art.

FIG. 3 is a schematic drawing showing the arrangement of a positive contact member in a battery case according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 3, a battery case **7** is shown having a peripheral wall **71**, a terminal hole **72** in the peripheral wall **71**, and a contact member **8** mounted in the terminal hole **72** for the contact of the positive terminal of the battery. The contact member **8** has a hollow cylindrical mounting portion **81** affixed to the periphery of the terminal hole **72**, and a contact portion **82** closely attached to the inner surface of the peripheral wall **71** of the battery case **7** for the contact of the positive terminal of the battery. The battery case **7** further has a flange **73** protruded from the inner surface of the peripheral wall **71** around the terminal hole **72**. According to this embodiment, the flange **73** has a circular shape. The size of the circular flange **73** is equal to or smaller than the contact portion **82** of the contact member **8**. The contact member **8** further has a connecting portion **83** extended from the periphery of the contact portion **82** and connected to the corresponding electric wire **84**. Further, the thickness of the flange **73** is greater than the diameter of the electric wire **84**.

Referring to FIG. 3 again, the hollow cylindrical portion **81** of the contact member **8** is inserted into the terminal hole **72** to force the contact portion **82** into close contact with the flange **73**, and then the hollow cylindrical mounting portion **81** of the contact member **8** is riveted to the terminal hole **72** of the battery case **7**. When riveting the hollow cylindrical mounting portion **81** of the contact member **8** to the terminal hole **72** of the battery case **7**, the connecting portion **83** is deformed and closely attached to the connection area between the border area **731** of the flange **73** and the inner surface of the peripheral wall **71** of the battery case **7**. Preferably, the connection area **731** between the border of the flange **73** and the inner surface of the peripheral wall **71** of the battery case **7** is a slope. Because the connecting portion **83** is closely attached to the slope **731** and extended to the corresponding electric wire **84** in direction far away from the positive terminal of the battery, the connecting portion **83** does not touch the shell (negative terminal) of the battery.

A prototype of battery case has been constructed with the features of FIG. 3. The battery case functions smoothly to provide all of the features discussed earlier.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.